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BIENNIAL REPORT

STATE HORTICULTURAL COMMISSION

OF THE

STATE OF UTAH

FROM

December 1st, 1912, to
November 30th, 1914

PRINTED BY
THE ARROW PRESS
TRIBUNE-REPORTER PRINTING CO.
SALT LAKE CITY,
1915

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Organization, December 1, 1912

Thomas Judd, President,
St. George, Utah.
(Resigned July 1st, 1913.)

Dr. E. D. Ball,
Entomologist Experiment Station,
Logan, Utah.

Dr. L. D. Batchelor,
Horticulturist Experiment Station,
Logan, Utah.

William H. Homer, Jr.,
Pleasant Grove, Utah.

J. Edward Taylor, Secretary,
State Horticultural Inspector,
Salt Lake City, Utah.

A. Louise Eldredge,
Clerk in Charge of Office,
Salt Lake City, Utah.

Reorganization, January 23, 1914

William H. Homer, Jr., President.
Dr. E. D. Ball.
Dr. L. D. Batchelor.

C. H. Smith,*
Centerville, Utah.

J. Edward Taylor, Secretary,
State Horticultural Inspector.

A. Louise Eldredge,
Clerk in Charge of Office.

---

*Succeeded Thomas Judd, December 18th, 1913.

Salt Lake City, Utah,
February 13, 1915.

SIR:

The State Horticultural Commission beg to hand you herewith their report for the biennium December 1st, 1912, to November 30th, 1914.

Respectfully submitted,
J. EDWARD TAYLOR,
Secretary.

Hon. William Spry,
Governor of Utah,
Salt Lake City, Utah.

BIENNIAL REPORT

OF THE

State Horticultural Commission,

December 1, 1912, to November 30, 1914

The horticultural industry in Utah has been undergoing a rapid readjustment during the past two years, and the apparent depression is nothing more than a reaction following a period of unwise and speculative planting. It is the same reaction that follows a boom in any industry. It is having a decidedly beneficial effect on the fruit business of Utah, in that it is eliminating a lot of orchards that never could produce a profit for their owners because of location, unfavorable soil or climatic conditions, or wrong varieties. It is, also eliminating the near fruit grower who is not temperamentally fitted for the business.

CONDITIONS IMPROVED.

Taken as a whole, fruit growing in Utah is on a better basis than at any time since 1910, when the idea prevailed that it was only necessary to plant an orchard in order to secure wealth and happiness. This notion did not strike Utah alone, but was prevalent through the whole northwest, where the reaction is more severe because land values reached a higher level and their liquidation was attended with greater losses.

With the ordinary farm crops the planting and harvesting is an annual affair, but with an orchard you plant for the future with no harvest from the trees for from four to six years, depending on the variety. During all this time the trees require care and attention, and many things may happen to discourage the grower. If an orchard is planted on enthusiasm, as is too often the case, the supply becomes exhausted before the trees come into bearing. The result is the trees are neglected and finally abandoned. Altogether too many orchards have been planted without figuring the cost in money and effort to bring them to bearing.

ACREAGE DECREASED.

A careful canvass of the orchards of the State shows that there has been an actual decrease in the total acreage devoted to fruit growing since the fall of 1912, when the area was 43,660 acres. Sixty-one per cent of this area was in young orchards which had not yet come to bearing. It is in these young orchards and very old ones that the decrease has come. At the present time there is not more than 30,000 acres of land in orchards in the State, but it must be remembered that the acreage of orchards producing fruit is increasing and will continue to do so for the next three or four years, even with no additional planting.

ORCHARDING A BUSINESS PROPOSITION.

Orcharding is a business proposition and must be operated on the same basis as any other business. Cost of production must be watched and unprofitable trees eliminated. Above all, the standard and quality must be raised. Take, for instance, a year like 1914—a year of heavy production. There was a market for all the first quality fruit produced. It was the poor quality that flooded the market and demoralized prices.

Commenting on the fruit industry, Mr. W. H. Garvin, Manager of the Utah Fruit Growers Association, sums up the situation in the following statement:

> "The day of spectacular profits on fruit orchards may be gone, but I believe there is a safe, sane profit to the grower if the same ability is used in the management that must be shown to make any business a success. In making this statement I am preaching more or less from practice, and not theory.
>
> "I have two ranches in Colorado, both devoted to fruit, with the exception of a few acres in hay. These places are two miles apart. The location, the age and varieties of the trees are practically the same. I have received my returns on peaches from both places. One shows a profit of $56.00 per acre after deducting all expenses for

cultivating, spraying, picking, packing and marketing through the local Association. The highest price any of the above peaches brought was 34 cents per box f. o. b., which means cost of picking, packing, boxes and marketing had to be deducted from this price, and we all admit this is a lower figure than we have any reason to expect. This place was under the management of a man who knows his business. The yield was heavy, the quality fine and the fruit went onto the market at the right stage of maturity, properly packed. The results from the other place show a deficit of nearly $30 per acre. This place was badly neglected last year, the result being that a large percentage of this season's crop had to be culled on account of poor size, poor color, etc. The fruit from this orchard was shipped in bushel baskets and brought considerably more net per pound than the fruit from the first orchard. The contrast in results is due to the difference in quality, and therefore the quantity of good merchantable fruit shipped. The expense of caring for the orchard, of picking and culling such a heavy percentage of inferior fruit, makes up the loss. I want it clearly understood that what was shipped was sold for the highest market price, there being no loss due to improper handling or condition.

"This last statement suggests another matter I want to touch on. Admitting that there may be defects in the manner of marketing, it is my opinion that at least 75 per cent of all avoidable losses are due to the quality of the fruit produced and in the manner it is prepared for market. Much could be said along these lines, but just a few words must do now. Poor fruit affects the market for good fruit. It costs just as much to pick, pack, transport and sell a No. Two box of fruit as a No. One. The difference in the selling price is clear gain.

"I believe we are apt to have an occasional year when indifferent orchards of various varieties will pay, but I believe this will be the exception and not the rule."

CHANGES IN MEMBERSHIP.

During the past two years there has been one change in the membership of the Commission. On July 1st, 1913, the resignation of Mr. Thomas Judd, who had served as President of the horticultural department of the State for fourteen years, was accepted by the Governor, and on December 18th, 1913, Mr. C. H. Smith of Centerville, Utah, was appointed to fill the vacancy. On January 23rd, 1914, Mr. W. H. Homer, Jr., was elected President of the Commission to succeed Mr. Judd, at which time the following resolution was adopted:

> "The members of the Commission take this occasion to express their sincere appreciation of the invaluable services rendered the Horticultural Interests of the State by the retiring President of the Commission, the Honorable Thomas Judd, of St. George, who for fourteen years has stood at the head of the State Board of Horticulture. Mr. Judd has labored unceasingly and unselfishly for the development of Utah Horticulture.
>
> "It is with the highest esteem that fruit growers residing in all parts of the State refer to Thomas Judd as the "Father of Utah's Horticulture'."

ORCHARD SURVEY.

The constant demand for accurate information concerning the horticultural industry of the State and the fact that such information is nowhere available, prompted this Commission to start a systematic survey of the orchards of the State.

The work contemplates making a card record of each commercial orchard, including the following information:

Name of owner and tenant, location, acreage, number of trees, varieties, age of trees, method of propagation, source of stock, planting plan; with notes on soil management, irrigation, pruning, spraying, pests and cultural conditions.

With this information as a basis it will be possible to figure production with some degree of accuracy.

During 1913 and 1914 the survey was started in Box Elder County, and will be continued as the facilities at the disposal of the department will allow. The district extending from the Weber county line north to and including Brigham City has been completed, and the results included in this report.

ORCHARD PLANTINGS.

Tables No. 1 and 2 give in detail the trees planted in orchards during the spring of 1913 and 1914. Apples and peaches still continue to predominate in the planting lists. There has, however, been a remarkable falling off in the planting during the last two years, as shown by Table No. 3, which gives the total plantings since 1910. The planting in 1910 was the greatest of any year in the history of the State. The decrease in planting since 1910 has been brought about largely through the elimination of the speculative planting and the difficulty encountered in the marketing of the fruit crop during the last three years.

Table No. 1.

Trees Planted in Orchards Spring of 1913.

County	Apples	Peaches	Cherries	Pears	Plums Prunes	Apricots	Total
Utah	43,635	20,778	2,945	2,099	735	195	70,387
Washington	3,000	25,000	1,250	500	100	200	30,050
Weber	11,960	9,000	1,200	400	540	1,400	24,500
Salt Lake...	10,000	4,000	4,000	2,000	1,500	700	22,200
Box Elder .	10,000	2,500	3,000	500	1,000	5,000	22,000
Davis	8,000	2,000	1,200	400	500	2,000	14,100
San Pete ...	6,536	612	702	575	482	30	8,937
Iron	3,000	700	325	350	150	50	4,575
Millard	2,750	440	171	172	40	25	3,598
Tooele	822	518	0	22	206	0	1,568
Rich	750	0	40	75	100	6	971
Summit	114	0	15	18	25	0	172
San Juan ...	20	25	11	11	13	15	95
Beaver	0	0	0	0	0	0	0
Morgan	0	0	0	0	0	0	0
Cache*	......	......	......	......	......	......	......
Emery†	......	......	......	......	......	......	......
Grand*	......	......	......	......	......	......	......
Carbon* ...	......	......	......	......	......	......	......
Juab *	......	......	......	......	......	......	......
Sevier*	......	......	......	......	......	......	......
Uinta*	......	......	......	......	......	......	......
Wayne†	......	......	......	......	......	......	......
Wasatch† ..	......	......	......	......	......	......	......
Piute†	......	......	......	......	......	......	......
Kane†	......	......	......	......	......	......	......
Garfield †...	......	......	......	......	......	......	......
	100,587	65,573	14,859	7,122	5,391	9,621	203,153

*No report. †No inspector.

FRUIT SHIPMENTS—1914.

Table No. 5.

Peaches.

County	Peddlers (cases)	Freight in boxes (cars)	Freight in bulk (cars)	Canning Factory (lbs.)	Local Express (cases)	Express Solid Cars
Box Elder	100,000	618	0	130,000	80,000	0
Weber	30,000	472	0	1,016,940	24,186	0
Davis	10,000	38	0	0	3,500	0
Utah	113,200	639	0	34,140	8,000	0
Salt Lake	30,000	2	0	0	0	0
Other Counties.	55,000	1½	0	20,436	0	0
Total......	338,200	1,770½	0	1,201,516	115,686	0

Table No. 6.

Apples.

County	Peddlers **(boxes)**	Freight in boxes (cars)	Freight in bulk (cars)	Canning Factory (lbs.)	Local Express (boxes)	Express Solid Cars
Box Elder	2,000	475	60	0	6,000	0
Weber	15,000	75	15	327,900	2,300	0
Davis	7,000	80	17	125,000	3,000	0
Utah	98,750	196	3	4,400	800	0
Salt Lake	15,000	28	2	393,420	340	0
Cache	0	40	7	0	0	0
Other counties..	650	1	0	0	0	0
Total......	138,400	895	104	850,720	12,440	0

Table No. 7.

Small Fruits.
(Other than Strawberries.)

County	Peddlers (cases)	Freight in boxes (cars)	Freight in bulk (cars)	Canning Factory (lbs.)	Local Express (cases)	Express Solid Cars
Box Elder	10,000	0	0	0	50,000	8
Weber	3,300	0	0	86,000	20,585	0
Davis	0	0	0	0	0	0
Utah	27,000	0	0	0	19,000	14
Salt Lake	25,000	0	0	0	510	0
Other counties..	10,200	0	0	2,321	600	0
Total......	75,500	0	0	88,321	90,695	22

Table No. 8.

Strawberries.

County	Peddlers (cases)	Freight in boxes (cars)	Freight in bulk (cars)	Canning Factory (lbs.)	Local Express (cases)	Express Solid Cars
Box Elder	4,000	0	0	0	28,000	3
Weber	1,250	0	0	86,000	2,294	0
Davis	60,000	0	0	0	0	0
Utah	18,000	0	0	0	16,150	11
Salt Lake	22,000	0	0	0	1,576	0
Other counties..	1,500	0	0	0	0	0
Total......	106,750	0	0	86,000	48,020	14

Table No. 9.

Plums and Prunes.

County	Peddlers (lbs.)	Freight in boxes (cars)	Freight in bulk (cars)	Canning Factory (lbs.)	Local Express (boxes)	Express Solid Cars
Box Elder	20,000	15	0	0	72,000	0
Weber	50,000	0	0	47,000	4,417	0
Davis	30,000	0	0	0	0	0
Utah	160,000	69	0	4,320	7,000	0
Salt Lake	120,000	0	0	0	0	0
Other counties..	3,000	1½	0	0	1,500	0
Total......	383,000	85½	0	51,320	84,917	0

Table No. 10.

Cherries.

County	Peddlers (lbs.)	Freight in boxes (cars)	Freight in bulk (cars)	Canning Factory (lbs.)	Local Express lbs.	Express Solid Cars
Box Elder	24,000	0	0	0	300,000	4
Weber	70,000	30	0	319,300	111,430	3
Davis	35,000	0	0	0	0	10
Utah	90,000	0	0	0	480,000	16
Salt Lake	300,000	0	0	0	2,500	0
Other counties..	35,000	0	0	0	0	0
Total......	554,000	30	0	319,300	893,930	33

Table No. 11.

Pears.

County	Peddlers (boxes)	Freight in boxes (cars)	Freight in bulk (cars)	Canning Factory (lbs.)	Local Express (boxes)	Express Solid Cars
Box Elder	2,000	0	0	0	2,000	0
Weber	4,000	4	0	300,000	1,112	0
Davis	0	0	0	0	0	0
Utah	2,600	76	0	16,650	800	0
Salt Lake	5,000	0	0	0	235	0
Other counties..	700	0	0	2,217	0	0
Total......	14,300	80	0	318,867	4,147	0

Table No. 12.

Miscellaneous.

County	Peddlers (boxes)	Freight in boxes (cars)	Freight in bulk (cars)	Canning Factory (lbs.)	Local Express (boxes)	Express Solid Cars
Box Elder	0	0	0	0	0	0
Weber	0	0	580*	764,630†	0	0
Davis	0	0	0	0	0	0
Utah	0	0	0	0	0	0
Salt Lake	0	0	0	0	0	0
Other counties..	0	0	0	0	0	0
Total......	0	0	580	764,630	0	0

*Mixed and unclassified. †Apricots.

NURSERY BUSINESS.

The nursery business has been directly affected by the falling off in the planting of orchards in this and surrounding states. As the demand for trees became lighter, the nurseries of the state were left with a large surplus of growing stock on their hands which has necessitated a readjustment in the markets and a wider distribution. As a result of this, large quantities of stock have been exported from the state. Utah nurserymen are now shipping carload lots to California planters, and they have even invaded the markets of the Missouri River territory.

INSPECTION OF SEEDLINGS.

The policy adopted in 1909, of giving all seedling stock imported into the state a careful inspection has been followed out the last two years. A few insects of minor importance, but none of a dangerous character, were found.

Most of the apple seedlings, some pears and ornamentals are American grown, while practically all the balance are grown in France. It is these foreign seedlings that have caused the most concern, owing to the danger of importing new pests into the State.

Tables 13 and 14 give the number of seedlings and variety by counties, and Table No. 15 shows the seedlings inspected since 1911.

Table No. 13.

Seedlings Inspected 1913.

County	Cherry Mahaleb	Cherry Mazzard	Pear	Apple	Myrobalan (Plum)	Miscel. Ornamental	Manetti (Rose)	Quince
Salt Lake	17,000	18,000	20,000	245,000	15,000	0	0	0
Weber	35,000	15,000	80,000	750,000	20,000	0	0	5,000
Davis	170,000	30,000	10,000	80,000	62,000	21,400	5,000	0
Box Elder	25,000	20,000	2,000	140,000	3,000	3,000	500	0
Utah	6,000	4,000	10,000	88,000	2,000	0	0	0
Washington	9,000	0	1,200	25,000	0	0	0	0
Cache*	0	0	0	0	0	0	0	0
Total	262,000	87,000	123,200	1,328,000	102,000	24,400	5,500	5,000

*No report.

Table No. 14.

Seedlings Inspected 1914.

County	Cherry Mahaleb	Cherry Mazzard	Pear	Apple	Myrobalan (Plum)	Miscel. Ornamental	Manetti (Rose)	Quince
Salt Lake	20,000	20,000	30,000	125,000	21,000	67,110	5,000	0
Weber*)								
Davis)	32,000	35,000	28,000	72,000	19,000	35,000	14,000	0
Box Elder	6,000	8,000	1,000	50,000	5,000	3,000	1,000	0
Utah	7,000	2,500	14,500	2,000	3,000	3,000	0	0
Washington	3,000	0	2,000	5,000	0	0	0	0
Cache	0	0	0	0	0	0	0	0
Total	68,000	65,500	75,500	254,000	48.000	108,110	20,000	0

*Weber and Davis reported together.

Table No. 15.

Comparison Seedlings Inspected.

1911	2,460,100
1912	3,642,351
1913	1,937,100
1914	639,110

NURSERY PRODUCTION.

As it takes from two to three years to grow stock ready for market, the trees which were sold in 1913 and 1914 were planted in the spring of 1910, 1911 and 1912. The nursery planting these years was very heavy and the production of trees has, therefore, continued to increase.

The falling off of productions in 1913 was caused by the large demand in 1912 which took practically every tree that could be dug. Many of the trees sold in 1912 would ordinarily have been sold in 1913.

The record of nursery production by counties is shown in Tables 16, 17, and 18.

Table No. 16.

Nursery Stock Grown in Utah for Spring Delivery 1913.

County	Apples	Peaches	Cherries	Pears	Plums Prunes	Apricots	Grapes
Salt Lake ...	390,532	101,018	29,060	28,740	14,906	11,300	0
Box Elder ..	15,000	12,000	5,000	5,000	3,000	5,000	0
Weber	223,263	29,110	28,689	33,929	36,227	6,875	0
Davis	30,000	6,800	900	22,000	800	2,500	4,500
Utah	1,450	2,130	2,000	1,350	540	0	0
Washington	5,000	35,000	700	400	150	200	0
Total...	665,245	186,058	66,349	91,419	55,623	25,875	4,500

Table No. 17.

Nursery Stock Grown in Utah for Spring Delivery 1914.

County	Apples	Peaches	Cherries	Pears	Plums Prunes	Apricots
Salt Lake	795,500	141,500	135,000	105,000	15,000	12,000
Box Elder	50,000	75,000	12,000	10,000	12,000	8,000
Weber*)						
Davis)	330,640	73,000	20,500	88,525	10,245	53,800
Utah	113,800	7,100	2,500	2,950	3,250	1,000
Washington	4,000	8,000	500	1,500	200	100
Cache	2,000	0	0	0	0	0
Total.........	1,295,940	304,600	170,500	207,975	40,695	74,900

*Weber and Davis reported together.

Table No. 18.

Comparison of Number of Trees Produced in Nurseries.

Variety	1911	1912	1913	1914
Apples	804,387	1,551,671	665,245	1,295,940
Peaches	293,338	197,099	186,058	304,600
Cherries	97,126	107,350	66,349	170,500
Pears	59,941	40,332	91,419	207,975
Apricots	23,909	31,437	55,623	74,900
Plums and Prunes......	28,055	37,509	25,875	40,695
Total..............	1,306,756	1,965,398	1,090,569	2,094,610

SEEDLINGS PLANTED.

The sudden falling off of the demand for trees caused a corresponding cutting down in the planting of seedlings for future delivery. The seedlings planted in 1913 and 1914, and the comparison since 1911 are tabulated in Tables 19, 20, and 21.

Table No. 19.

Seedlings Planted in Nurseries 1913.

County	Apple Grafts	Apple Buds	Peach	Cherry Sweet	Cherry Sour	Pear	Plums Prunes	Apricot
Salt Lake	266,000	138,500	100,000	18,000	17,000	20,000	15,000	25,000
Weber	125,000	700,000	50,000	15,000	35,000	80,000	20,000	25,000*
Davis	140,000	96,000	40,000	24,000	5,000	28,000	30,000	7,000
Box Elder	30,000	130,000	20,000	20,000	25,000	2,000	5,000	10,000
Utah	0	88,000	0	4,000	6,000	8,000	2,000	0
Washington	400	7,000	4,000	600	100	700	200	300
Cache†	0	0	0	0	0	0	0	0
Total	561,400	1,159,500	214,000	81,600	88,100	138,700	72,200	67,300

*Includes 5,000 quince. †No report.

Table No. 20.

Seedlings Planted in Nurseries 1914.

County	Apple Grafts	Apple Buds	Peach	Cherry Sweet	Cherry Sour	Pear	Plums Prunes	Apricot
Salt Lake	10,000	115,000	30,000	25,000	20,000	30,000	21,000	15,000
Weber*)								
Davis)	16,000	5,000	5,000	8,000	9,000	8,000	2,000	7,000
Box Elder	7,000	50,000	15,000	8,000	6,000	7,000	2,000	8,000
Utah	2,000	10,000	13,600	2,500	7,000	14,500	3,000	300
Washington	0	4,000	25,000	2,000	0	1,000	500	2,000
Cache	0	0	0	0	0	0	0	0
Total	35,000	184,000	88,600	45,500	42,000	60,500	28,500	32,300

*Davis and Weber reported together.

Table No. 21.

Comparison of Seedlings Planted in Nurseries.

Variety	1911	1912	1913	1914
Apple Grafts	1,221,140	1,480,000	561,400	35,000
Apple Buds	1,546,500	1,460,200	1,159,500	184,000
Peach	327,500	337,000	214,000	88,600
Sweet Cherry	68,300	368,000	81,600	45,500
Sour Cherry	79,000	694,000	88,100	42,000
Pear	131,500	214,800	138,700	60,500
Plums and Prunes	46,400	40,300	72,200	28,500
Apricot	15,500	48,000	62,300	32,300
Quince	0	0	5,000	0
Total	3,435,840	4,642,300	2,382,800	516,400

INFESTED FRUIT CONDEMNED.

A vigorous effort has been put forth to suppress the traffic in worm and scale infested fruit. Practically all the prosecutions under the horticultural law have been made for this offense.

Table No. 22 shows the number of bushels that were actually condemned by inspectors, but does not include thousands of bushels which were prevented from going onto the market by the maintenance of quarantines.

Table No. 23 gives a comparison of the last two years with 1912.

Table No. 22.

Bushels of Infested Fruit Condemned—1913-1914.

COUNTY	APPLES				PEARS			
	For worms		For scale		For worms		For scale	
	1913	1914	1913	1914	1913	1914	1913	1914
Salt Lake*	353	380	30	87¶	82	25	0	5
Box Elder	125	800	0	25	5	0	2	0
Weber	140	143	31	156	61	36	37	14
Davis	1,200	2,300	0	0	0	0	0	0
Utah	54	52	0	121	16	24	0	17
Carbon	350	‖ 50	0	0	50	10‖	0	0
San Juan‡	100	....	0	.....	40	.....	0	.....
Morgan	150	0	0	0	0	0	0	0
Summit	5	3	0	0	2	1	0	0
Sevier†	....	36	.....	0	.....	0	.....	0
Iron	0	0	0	0	0	0	0	0
Juab	0	0	0	0	0	0	0	0
San Pete	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Grand‡	0	....	0	.....	0	.....	0	.....
Rich‡	0	....	0	.....	0	.....	0	.....
Uinta§	0	0	0	0	0	0	0	0
Tooele§	0	0	0	0	0	0	0	0
Emery§	....	....	.....	.....	.....	.....	...	.....
Garfield§	....	....	.....	.....	.....	.....	...	.....
Beaver§	....	....	.....	.....	.....	.....	...	.....
Kane §	....	....	.....	.....	.....	.....	...	.....
Piute§	....	....	.....	.....	.....	.....	...	.....
Wasatch§	....	....	.....	.....	.....	.....	...	.....
Wayne§	....	....	.....	.....	.....	.....	...	.....
Cache†	....	6	.....	0	.....	0	...	0
Millard§	....	....	.....	.....	.....	.....	...	.....
Total	2,477	3,770	61	389	256	96	39	36

*Depot and market.
†No report 1913.
‡No report 1914.
¶Returned to Utah County.
‖From peddlers.
§No report.

Table No. 23.

Comparison Infested Fruit Condemned.

	APPLES		PEARS	
	For Worms	For scale	For Worms	For Scale
1912	1,834	73	353	7
1913	2,977	61	256	39
1914	3,770	389	96	36

INFESTED TREES CONDEMNED.

Table No. 24 gives the number of infested trees condemned during 1913 and 1914. The majority of these trees were so located as to be a menace to commercial orchards or nurseries.

Table No. 24.

Infested Orchard Trees Condemned—1913-1914.

County	1913	1914
Weber	....	214
Salt Lake	118	124
Utah	45	115
Box Elder	200	150
Davis	300	1
Cache	0	47
Grand*	47	....
San Pete	800	1,210
Rich*	15	....
Juab	....	50
Iron	0	5
Summit	52	45
Millard	180	150
Morgan	500	2
Emery†	....	....
Washington	0	0
Tooele	0	0
Wayne†	....	....
Beaver†	....	....
Carbon	0	0
Sevier‡	....	0
Garfield†	....	....
Kane†	....	....
Piute†	....	....
Wasatch†	....	....
Uinta	0	0
San Juan*	0	....
	2,257	2,113

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*No report 1914.
† No report.
‡No report 1913

COUNTY INSPECTION.

The county inspection service, especially in the important fruit producing counties, has shown much improvement in the last two years. The suggestions of the Commission have been carried out as far as the facilities at the disposal of the inspectors would allow. The inspectors of Weber, Box Elder and Utah counties have purchased automobiles, which has materially increased their efficiency.

The cost to the counties of the inspection service since 1905 is shown in Table No. 25.

Table No. 25.

Total Cost of Inspection in Dollars by Counties.
(10 years.)

County	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
Salt Lake	2,571	2,490	3,205	3,628	3,357	3,520	2,974	3,024	2,613	2,944
Box Elder	325	409	544	627	668	801	1,107	976	836	1,175
Weber	897	917	907	1,002	1,000	1,013	1,358	1,178	1,220	1,444
Utah	647	478	781	908	699	1,347	1,800	1,887	1,534	1,580
Cache	195	250	361	272	400	113	120	125	....	....
Emery	284	483	441	357	388	192	....	....	....	....
Grand	....	17	18	44	65	22	24	160	24	....
Beaver	....	....	....	100	100	100	100	100	100	100
Tooele	167	166	212	56	191	149	270	261	104	207
Iron	49	76	30	21	16	95	42	85	29	36
Juab	....	....	....	....	152	170	111	75	66	139
Morgan	34	50	91	44	91	101	54	96	63	70
Rich	75	75	80	84	76	98	95	55	96	....
Carbon	13	51	220	16	229	82	74	46	195	300
Sevier	....	....	....	24	36	69	....	....	....	84
Summit	....	....	....	....	208	190	316	333	460	175
Washington	....	75	4	5	16	12	....	66	21	27
Millard	....	....	....	248	206	137	....	....	108	194
San Juan	....	....	....	....	20	30	122	76	87	....
Davis	....	....	....	....	....	230	150	286	234	700
San Pete	....	....	....	....	....	....	432	602	366	378
Uinta	....	....	....	....	....	....	....	....	....	146
Wayne	....	....	....	....	....	....	....	....	....	....
Garfield	....	....	....	....	....	....	....	....	....	....
Piute	....	....	....	....	....	....	....	....	....	....
Wasatch	....	....	....	....	....	....	....	....	....	....
Kane	....	....	....	....	....	....	....	....	....	....
	5,257	5,537	6,894	7,436	7,918	8,471	9,149	9,431	8,156	9,699

....No report.

FINANCIAL REQUIREMENTS

The work of this Commission can be carried on during the calendar years 1915 and 1916 with an appropriation of $10,000.00, if no additional duties are required of the department. This was the amount appropriated by the last legislature for 1913 and 1914.

CHANGES IN THE LAW.

One of the most important sections of the Horticultural Law is Section 14, (Chapter 48, Laws of 1909) covering the sale of worm and scale infested fruit. This section is somewhat ambiguous and has led to considerable confusion in the interpretation and administration of the law. The proviso with reference to the utilization of infested fruit in the manufacturing of fruit by-products should be made more explicit. An amendment covering this change will be brought before the legislature.

The Fruit Package Law (Chapter 64, Session Laws of 1913) is a very meritorious law. Legislation along this line is badly needed, but the act in its present form does not meet the emergency which its drafters contemplated. This law should be amended so that some state department is responsible for its enforcement and the procedure in case of prosecution should be more clearly set forth.

ARBOR DAY.

The Laws of Utah fix the date for Arbor Day as April 15th. Practical experience has shown that this is entirely too late in the season for the best results in planting trees for the major portion of the state, and it is, therefore, recommended that the time be changed to a date nearer April 1st. The observance of Arbor Day is a most appropriate function, and the nature of the celebration demands that we give first consideration to the best interests and welfare of the growing tree.

ALFALFA WEEVIL QUARANTINES.

Quarantines have been established against Utah by Arizona, California, Idaho, Montana and Oregon, on account of alfalfa weevil, which infests this State. While the alfalfa weevil investigations are not directly associated with the work of this department, yet the quarantine orders have placed restrictions upon horticultural products and imposed conditions on other commodities which must be carried out by this department, as there is no other state department organized for this class of work.

The alfalfa weevil being a comparatively new pest, as far as America is concerned, it is not surprising that the states have acted largely on fear and supposition, and established embargoes which are irrational and arbitrary. This is clearly shown by the lack of uniformity indicated by the following outline of existing quarantines:

Nursery Stock:

Arizona—Entrance prohibited.

California—Nursery stock must be packed in fresh shavings, excelsior or other suitable packing (except tule, hay, and straw), and containers and cars must be fumigated with potassium cyanide, both at point of origin and delivery. Must be consigned to a quarantine officer designated by State Commissioner of Horticulture, who will fumigate as for alfalfa seed.

Idaho—Same instructions in packing as California, except tule hay can be used if fumigated and accompanied by an official certificate of fumigation.

Montana—Prohibited unless accompanied by an official certificate of fumigation.

Oregon—Hay, straw, tule, grass and forage plants must not be used in packing any nursery stock shipped into Oregon.

Fruits and Vegetables:

Arizona—Entrance of fruit prohibited. No restriction on vegetables.

Montana—Entrance prohibited from April to October inclusive (excepting that after August 1st, fruits and vegetables may be shipped from points where inspection service is maintained by State Horticultural Inspector of Utah. All shipments to be handled under special arrangement and to bear an official certificate of inspection.)

(No restriction in other states.)

Alfalfa Seed:

Arizona—Entrance prohibited.

California—Seed must be enclosed in weevil tight containers (seamless sacks) consigned to a quarantine officer, at a place designated by the State Commissioner of Horticulture of California, for disinfection at cost of consignee or owner. After disinfection, seed will be released upon payment of charges.

Idaho—Same as California.

Montana—Must be fumigated at point of shipment and be accompanied by an official certificate.

Oregon—Entrance prohibited.

Hay, All Kinds:

Arizona—Entrance prohibited.

California—Entrance prohibited.

Idaho—Entrance prohibited.

Montana—Entrance prohibited.

Oregon—Entrance prohibited.

Straw:

Arizona—Entrance prohibited.

California—Entrance prohibited.

Idaho—Entrance prohibited.

Montana—(Excludes only forage crops.)

Oregon—Entrance prohibited.

Bees in Hive:

Arizona—No restrictions.

California—Entrance prohibited.

Idaho—Entrance prohibited.

Montana—No restriction.

Oregon—Must not be packed in hay, straw, tule, weeds or forage crops.

Household Goods:

Arizona—Must be inspected and accompanied by an official certificate of inspection made under oath.

(No restrictions in other states.)

Livestock:

Arizona—Special arrangements must be made with the Arizona State Entomologist before shipments are made, and in any case must be transferred to clean cars before crossing the state line.

California—Hay and straw must not be used in cattle cars.
Idaho—Same as California.
Montana—No restrictions.
Oregon—Hay, straw, grass and forage crops of all kinds must not be used in cattle cars.

Grain:

Arizona—Entrance prohibited.
(No restrictions in other states.)

OFFICERS IN CHARGE OF ENFORCEMENT OF QUARANTINES.

Arizona—A. W. Morrill, State Entomologist, Phoenix, Ariz.
California—A. J. Cook, State Commissioner of Horticulture, Sacramento, Calif.
Idaho—C. K. Macey, State Horticultural Inspector, Boise, Ida.
Montana—M. L. Dean, State Horticulturist, Missoula, Mont.
Oregon—Wilbur K. Newell, Commissioner at Large, Oregon State Board of Horticulture, Portland, Oregon.

In the light of scientific investigations which have been made relative to the spread of the alfalfa weevil, these quarantines are not justified and do not afford the states establishing them the protection they intended to secure. We have had the weevil in Utah for approximately ten years, and although the infested area is being extended gradually by the insects flying and crawling, there is not a single instance where a colony of weevil has become established at any distance from the previously infested points. If ordinary commercial traffic were a factor in extending the infestation there would have been outbreaks at points a considerable distance from the original area. The introduction into Utah, presumably from Europe, is the only known case where such transportation occurred, and we do not know how this happened.

A careful investigation of the possibility of alfalfa weevil being carried in shipments of alfalfa seed, nursery stock, fruits and vegetables has been made covering a period of two years. These investigations show that the only danger of spreading alfalfa weevil is by shipping alfalfa hay or any produce which has been handled in contact with it between July 15th and the beginning of winter. Early potatoes are practically the only crop that presents any danger from this source, and it is an easy matter to handle this crop in such a way as to eliminate the risk.

The Bureau of Entomology of the United States Department of Agriculture has been investigating in detail the spread of the weevil from the standpoint of commercial traffic. The Bureau has placed much valuable information at the disposal of the authorities of Utah and other states. This information, coming from such an impartial source, did much to suppress the uneasiness felt in surrounding states over the presence of the pest so near their borders.

MONTANA QUARANTINE.

Of all the alfalfa weevil quarantines established against this state, that of Montana prohibiting shipments of fruit and vegetables from Utah, is the most serious. As originally made, this quarantine absolutely prohibited shipments of these commodities from the first of April to the last of October each year. After considerable negotiations with the Montana authorities, this order was modified so as to allow shipments to go in under inspection after August 1st. Even with this modification it is working considerable hardship on the fruit growing interests of the state. It practically excludes the entire crop of strawberries, raspberries, gooseberries and other early small fruits; cherries, apricots, and early vegetables.

The records of the railroad and express companies, for the months of May, June and July, 1912, show the following shipments:

Fruit, local express, 4,479 cases	67,187 lbs.
Vegetables, local express	442,755 "
Fruits and vegetables, local freight	13,684 "
Straight carloads by freight (25 cars)	625,000 "
	1,148,626 lbs.

The points principally affected are from Ogden north, where much of the planting has been made with an idea of supplying the Montana market. The production of berries and bush fruits which, of necessity, must go into nearby markets, is large throughout this section. The matter of readjusting the market for the fruit which has otherwise gone into Montana has caused some demoralization of the remaining local markets and has occasioned much waste.

After the first of August, fruit and vegetables may be shipped under the following conditions:

> "(a) Shipments for Montana to be made only from points designated by the State Horticultural Inspector of the State of Utah. Said State Horticultural Inspector of said State of Utah to notify the State Horticulturist of the State of Montana by registered mail of the designation of shipping points in the State of Utah. Said notification to be sent before any shipments to the State of Montana are made from said points.
>
> "(b) Shipments to be repacked from orchard boxes into new, clean boxes or other containers.
>
> "(c) All wagons or other conveyances used in hauling to the packing houses to be kept free from alfalfa straw, hay, or other litter or other means of contamination..
>
> "(d) All packing houses to be at all times free of alfalfa hay, other hays, straw and other means of contamination.
>
> "(c) Each package to be plainly stamped or tagged with an official certificate of the State of Utah, stating that it has been inspected and passed in compliance with these regulations, and stating where it was repacked and inspected.
>
> All Horticultural Inspectors of the State of Montana are hereby instructed and required to refuse admission into the State of Montana to all such articles as are herein designated from said State and counties except under the conditions herein enumerated. If any such articles as are hereinbefore listed be shipped into the State of Montana in violation of this quarantine they must be at once destroyed or returned to the shipper at his expense."

Under the provisions of this modification order, Ogden, Willard and Brigham City were opened for inspection and certification of shipments during 1913; and in 1914 Provo, Salt Lake and Logan were added to the list.

Inspection was made at the expense of the county or the shipper. When no other provision was made for paying for inspection service, contributions were accepted from the shippers by the State Treasurer, under the provisions of

Section 8, Chapter 48, Session Laws of 1909, and the inspection paid from this fund, as provided by law. A complete report of the receipts and expenditures of this fund is found in another part of this report. Inspections were made on the basis of 50 cents per hour for the time of the inspector doing the work; or where the shipper wanted a fixed amount, a charge of 2 cents per box on local express shipments and $5.00 per car on carloads was made.

The inspection work at Brigham City and Willard was done by Carl Isaacson and N. J. Valentine; at Ogden by R. N. Rasmussen; at Salt Lake by J. O. Smith; at Provo by Otto J. Poulson; and at Logan by H. R. Hagan of the Entomological Department of the Utah Agricultural College.

The quarantine on alfalfa hay and forage crops worked no hardship on the state, as practically no shipments of this kind are made into Montana. Requiring the fumigation of nursery stock is a reasonable regulation, but practically no shipments of nursery stock were made during 1913 and 1914.

Considerable Utah alfalfa seed is marketed in Montana. The effect of the quarantine was to cause the shippers some expense and inconvenience and in some cases Utah seed was discriminated against on account of the publicity the quarantine gave.

However, it is an easy matter to comply with the requirements, and no loss need be sustained by the Utah seedsmen if orders are secured. The principal points shipping seed into Montana during 1913 and 1914 were Smithfield, Tremonton, Ogden and Salt Lake.

Inspection service was provided and supervised by this department for approximately $100,000.00 worth of Utah products under this quarantine during the biennium just past.

CALIFORNIA QUARANTINE.

The California quarantine is next to Montana in its effect on the industries of the State. The prohibited list in California includes colonies of bees in hives; all hay, including alfalfa and other hay and straw in cattle cars. Previous to the establishing of this quarantine a number of Utah bee-keepers had been shipping their bees to California during the winter and early spring months and returning them later, thus extending the honey producing season. This business was entirely stopped by the quarantine.

The restrictions on nursery stock caused the nurserymen an additional expense in packing the California shipments but did not seriously interfere with the traffic. California has been one of the principal outside markets for Utah nursery stock during 1913 and 1914.

The same is true with alfalfa seed—California is an important market for Utah seed, and it was discriminated against to a limited extent on account of the quarantine. However, there is nothing on the quarantine which cannot be easily complied with, and except for the inconvenience the traffic in seed can continue.

ARIZONA QUARANTINE.

The Arizona quarantine is the most radical of any, but fortunately for Utah there is very little traffic between the two states on prohibited commodities. A very small amount of nursery stock has been shipped into Arizona in the past, and the prohibition on these shipments was of no importance. There is, however, a large number of people, particularly transient miners, who have moved to Arizona during the past two years. The quarantine on household goods made it necessary that these shipments be officially inspected and accompanied by an affidavit stating that they were free from alfalfa weevil. About 40 individual shipments, including one carload of household goods, were inspected and certified during the past two years. Practically the only effect of this provision has been to work a hardship on prospective residents of Arizona.

IDAHO QUARANTINE.

In all fairness to the Idaho authorities, it must be said that the quarantine against Utah on account of the alfalfa weevil was forced on them by the authorities of California, who made this one of the conditions upon which part of Idaho was released from the general quarantine which originally included both Idaho and Utah. The Idaho quarantine is, therefore, a duplicate of California, but there is practically no traffic from Utah on prohibited articles, and it has not interfered with the commerce between the two states.

OREGON QUARANTINE.

So far the Oregon quarantine has had no effect on the industries of Utah.

OTHER CROP PEST QUARANTINES.

The State of Idaho has a quarantine against the State of California on account of the potato tuber moth, which infests that state. In order to stop shipments of early potatoes from California coming through Utah dealers, the authorities of Idaho quarantined Utah and a number of other Western states. This embargo affects shipments only between March 1st and July 1st and, therefore, will not be a factor against the potato industry of this state.

CALIFORNIA EXHIBITS.

The work of collecting and installing the state horticultural exhibits for the Panama-California Exposition, San Diego, and the Panama-Pacific International Exposition, San Francisco, 1915, was done by the State Horticultural Inspector at the request of the Governor. On March 17th, he was designated as Director of Horticulture of the Utah Expositions Commission. This work has occupied about one-half of the time of the inspector since March, 1914.

The feature of the horticultural exhibit will be an extensive collection of fruit preserved in a transparent liquid by a special process, which retains the natural form and color of the fruit. With a little attention, this collection can be kept for a number of years, and can be used again in advertising our horticultural resources.

All the exhibition furniture and material in possession of the Horticultural Commission has been loaned to the Exposition Commission for use of the horticultural department at the California Expositions.

ORCHARD SURVEY.*

This survey covers all orchards of commercial importance, extending from the Weber County line north to and including Brigham City. It includes 727 blocks of fruit on 357 farms. Very small groups of trees on city lots and farms, which are used largely for the family supply, have not been considered, although in Brigham City these small plants, taken as a whole, produce a quantity of fruit which in the aggregate becomes a commercial factor, but the units are too small and change so frequently that they are of little permanent value.

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*Brigham City, Perry and Willard Districts, Box Elder County, Utah.

This district comprises one of the leading and oldest commercial peach sections of the state. The early history of carlot shipments of peaches and the development of the Elberta peach industry in Utah is closely associated with Brigham City. Practically two-thirds of the entire area, devoted to fruit growing, is planted to the Elberta peach, and over 93 per cent of all peach trees are the Elberta variety. The planting of Elbertas reached its height through this district in 1908, while over the rest of the state this did not occur until 1910. A summary of orchard planting is given in Table No. 26.

Table No. 26.

Summary of Orchard Planting.

VARIETY	Trees	Acreage	Total Trees	Total Acreage
Peaches:				
Elberta	169,587	1,028		
Early Elberta	2,777	17		
Yellow Free	3,463	18		
White Free	555	3		
Yellow Cling	1,034	5		
White Cling	460	2		
Unclassified	3,215	18	181,091	1,091
Apples			17,102	149
Cherries:				
Sweet	15,045	86		
Sour	2,983	17		
Unclassified	1,060	7	19,088	110
Apricots			8,551	49
Small Fruits:				
Dewberries		19		
Strawberries		9		
Raspberries		7		35
Plums and Prunes			6,217	30
Grapes				18
Persian Walnuts*			886	7
Pears			566	4
Unclassified			1,275	9
			234,776	1,502

---

*Commonly called "English" Walnuts.

It would appear from this table that apples were next in importance to peaches in this district. This is not the case. Practically every orchard has a few apples in it, yet their commercial importance is very limited because the majority of the product is consumed locally and does not enter commerce. Of the 357 orchards surveyed, only 23 contained commercial blocks of apples. Fifteen of these blocks are approximately 1 acre; two blocks approximately 2½ acres; two blocks, 5 acres; three blocks of 10 acres; and one block of 52 acres: This orchard was planted previous to 1903.

The classification of the different fruits by years is tabulated in Tables 27, 28, 29, 30, and 31.

CLASSIFICATION OF TREES WITH REFERENCE TO AGE—1913-1914.

Table No. 27.

Elberta Peaches.

	Elberta		Early Elberta	
Year Planted	Trees	Acreage	Trees	Acreage
Before 1903	10,854	57.35	0	0
1903	3,869	20.37	0	0
1904	4,175	22.92	0	0
1905	10,734	53.75	1	.01
1906	20,383	112.37	0	0
1907	31,398	178.32	10	.06
1908	33,802	297.31	58	.32
1909	25,665	117.79	804	4.84
1910	10,215	59.98	256	1.41
1911	6,157	35.50	472	2.44
1912	3,822	21.78	1,157	7.25
1913	1,248	6.64	10	.05
Unknown	7,265	43.98	9	.05
Total	169,587	1,028.06	2,777	16.43

Table No. 28.

Miscellaneous Peaches.

Year Planted	Yellow Free		Miscel.		White Free		Yellow Cling		White Cling	
	Trees	Area	Trees	Area	Trees	Area	Trees	Area	Trees	Area
Before 1903......	1,530	8.09	922	4.57	296	1.38	322	1.60	306	1.67
1903	142	.67	153	1.11	22	.11	2	.02	54	.24
1904	255	1.34	223	1.15	88	.52	27	.16	0	0
1905	430	2.45	497	2.88	30	.16	58	.36	68	.37
1906	578	2.98	336	1.75	25	.10	18	.10	0	0
1907	76	.48	322	1.86	36	.19	85	.43	5	.03
1908	277	1.27	257	1.48	33	.15	404	1.84	19	.10
1909	26	.15	51	.29	25	.14	1	.01	0	0
1910	0	0	142	.83	0	0	0	0	7	.04
1911	0	0	0	0	0	0	15	.05	0	0
1912	0	0	0	0	0	0	0	0	0	0
1913	0	0	0	0	0	0	0	0	1	.01
Unknown	149	.93	312	1.60	0	0	102	.60	0	0
	3,463	18.36	3,215	17.52	555	2.75	1,034	5.17	460	2.46

Table No. 29.

Cherries.

	Sweet		Sour		Unclassified	
Year Planted	Trees	Acreage	Trees	Acreage	Trees	Acr'ge
Before 1903.........	2,833	15.58	855	4.71	57	.30
1903	687	3.51	129	.65	0	0
1904	453	2.70	91	.55	2	.02
1905	408	2.07	50	.28	13	.06
1906	1,484	8.88	280	2.03	20	.13
1907	2,457	13.12	481	2.54	153	.93
1908	1,397	8.04	141	.74	0	0
1909	888	5.21	281	1.64	195	1.32
1910	1,392	9.81	399	2.25	289	2.33
1911	488	3.16	11	.06	269	1.69
1912	1,877	10.27	117	.55	2	.01
1913	265	1.57	127	.86	45	.24
Unknown	416	2.09	21	.16	15	.08
	15,045	86.01	2,983	17.02	1,060	7.11

Table No. 30.

Miscellaneous Tree Fruits.

Year Planted	Plums&Prunes Trees	Plums&Prunes Acr'ge	Apples Trees	Apples Acr'ge	Apricots Trees	Apricots Acr'ge	Pears Trees	Pears Acr'ge
Before 1903.	3,557	17.05	7,715	67.49	586	2.86	103	.73
1903	277	1.29	270	1.88	157	.46	7	.05
1904	295	1.70	77	.54	48	.25	0	0
1905	100	.37	51	.30	220	1.22	92	.44
1906	331	1.26	575	3.41	639	3.50	17	.11
1907	719	3.72	472	4.65	571	3.42	57	.36
1908	383	.87	268	1.69	1,219	6.79	4	.02
1909	39	.23	1,422	14.36	1,950	11.47	35	.16
1910	43	.25	665	6.60	1,124	7.65	1	.01
1911	123	.73	3,056	27.42	898	5.35	53	.49
1912	159	1.73	2,326	19.73	533	2.93	182	1.88
1913	54	.27	47	.34	222	1.24	15	.08
Unknown ..	137	.77	158	1.07	384	1.83	0	0
	6,217	30.24	17,102	149.48	8,551	48.97	566	4.33

Table No. 31.

Walnuts and Unclassified.

Year Planted	Persian Walnuts* Trees	Persian Walnuts* Acreage	Miscellaneous Trees	Miscellaneous Acreage
Before 1903.........	16	.07	0	0
1903	37	.22	0	0
1904	200	1.89	0	0
1905	203	1.19	0	0
1906	262	2.52	0	0
1907	20	.12	0	0
1908	36	.16	0	0
1909	33	.16	0	0
1910	0	0	0	0
1911	0	0	0	0
1912	0	0	0	0
1913	0	0	0	0
Unknown	79	.41	1,275	8.93
	886	6.74	12.75	8.93

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*Commonly called "English" Walnuts.

Table No. 32.

Small Fruits—Area.

Year Planted	Dewberries	Raspberries	Strawberries	Grapes
Before 1903	2.01	.29	0	1.96
1903	1.43	0	0	.10
1904	.60	0	0	0
1905	2.22	0	0	0
1906	1.29	1.36	0	1.77
1907	2.76	.67	.14	.13
1908	2.32	.60	0	4.38
1909	.69	0	0	.17
1910	1.00	.33	2.14	.55
1911	0	.45	1.42	0
1912	.77	0	1.39	.17
1913	.69	.36	3.89	.98
Unknown	3.38	3.00	.32	7.79
	19.16	7.06	9.30	18.00

The field notes during 1913 were taken by A. B. Ballantyne, assisted by Carl Sederholm. Howard B. Schweitzer, assisted by Albert Hansen did the field work in 1914. Carl Isaacson, County Horticultural Inspector of Box Elder, was frequently consulted on the details of the work and rendered very valuable assistance. Calculations and tabulations were made by Fred Mathews.

Table No. 33.

Comparative Size of Orchards—1913-1914.

Size	No. of Orchards	Acreage	% of Total
Less than 2½ acres	194	255	54
2½ to 5 acres	76	275	21
5 to 7½ acres	37	234	10
7½ to 10 acres	18	154	05
10 to 15 acres	17	211	05
15 to 20 acres	7	117	02
20 to 25 acres	3	62	01
Over 25 acres	5	194	01
	357	1,502	

With reference to the size of the orchards; the above table shows that by far the greatest number of orchards are comparatively small. There are few large orchards in this district. The largest orchard contains 60 acres.

CARE OF ORCHARDS.

The following Tables (Nos. 34, 35, and 36) show in a general way the condition of the orchards with reference to spraying, pruning and cultivation.

Table No. 34.

Condition with Reference to Spraying—1913-1914.

Sprayed	No. of Blocks	Acreage	% of Total
Regularly	226	1,021	68
Occasionally	71	219	15
Neglected	131	262	17
	428	1,502	

Table No. 35.

Condition with Reference to Cultivation—1913-1914.

Condition	No. of Blocks	Acreage	% of Total
Very good	99	437	29
Good	183	563	38
Medium	115	395	26
Poor	47	107	07
	443	1,502	

Table No. 36.

Condition with Reference to Pruning—1913-1914.

Pruned	No. of Blocks	Acreage	% of Total
Systematic	250	1,062	71
Irregular	87	282	19
Neglected	78	158	10
	415	1,502	

From the standpoint of general care, the orchards of this section are in good condition. A majority of the growers depend to a large extent upon their fruit for an income and put in the necessary time to keep the orchards in good physical condition. The neglected trees are mostly in very small tracts, approximately an acre in extent. They represent a very small factor in the income of the owner and are, therefore, neglected for more important work.

PERSIAN WALNUTS.

The growing of Persian (so-called English) walnuts has received considerable attention in an experimental way around Brigham City. There is a seedling tree growing on a town lot which has attracted local attention because of its productivity and hardiness. At the present time there are about 7 acres of these trees scattered through the commercial orchards. However, there are only two blocks of more than one acre each. The industry is yet in an experimental stage but the growers seem to be encouraged by the results they have reached so far.

Report on the Possibilities for Fruit Product Factories in Utah*

A careful survey of the existing horticultural conditions of Utah shows that the fruit industry is facing a readjustment.

Much of our fresh fruit, especially the stone fruits, have returned unsatisfactory prices to the Utah growers during the past few years. In many cases such fruit has remained unpicked and become a total loss. Other cases which are even far worse might be cited where the grower was called upon to furnish not only his fruit to Eastern markets free, but he also boxed the product and paid a portion of the freight.

With this condition confronting the State of Utah, the Horticultural Commission in co-operation with the Agricultural College combined to appoint a committee of two to help solve, if possible, this complicated problem. The possibilities of erecting fruit product manufacturing establishments in Utah as a means of marketing our fruit and saving the great wastes of the present, was the chief problem the aforementioned committee was called upon to help solve.

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*Report of a joint committee appointed by the Utah Agricultural College of Logan, represented by Dr. L. D. Batchelor, and the State Horticultural Commission, represented by C. H. Smith of Centerville, to investigate the possibility of improving the fruit conditions in Utah by the establishment of fruit product factories.

A canvass of the jobbers, wholesalers, and brokers of the State of Utah revealed the fact that approximately a quarter of a million dollars worth of processed fruit is annually imported into this state. The big majority of this importation is for the Utah consumption and includes such products as evaporated apples, dried peaches, prunes, canned cherries and peaches, various jams, jellies, marmalades, cider, vinegar, grape juice, etc.

This fact of itself is not a sufficient reason for the establishment of fruit canneries, evaporators, etc., in Utah. There is an economic, as well as a horticultural side to this question. Perhaps some of these manufactured products are sold to the people of Utah cheaper than they can be produced within the State. Fruit by-product factories cannot be established primarily for saving our fruit from decay or the promotion of home industry. They should only be established if Utah can successfully compete with the world in the production, and marketing of a manufactured product. For example, can dried peaches be produced in California by sun drying and landed on the Utah markets cheaper than a similar article can be produced by artificial drying in this State? If such is the case, we must be content to buy dried peaches from California and direct our efforts to growing crops better adapted to local conditions than evaporated peaches. On the other hand much of our low grade stone fruits and apples are allowed to decay in the orchard, while the same kind of fruits are imported into the State in some manufactured form. The following information was gathered to help remedy, if possible, this wastefulness,—these apparently poor business methods of the fruit industry.

GENERAL PLAN OF THE SURVEY.

In obtaining information on this subject the committee has endeavored to learn from the experience of others. Interviews were obtained and observations made throughout many of the fruit growing sections of Idaho, Oregon, Washington, and California. The leading workers in horticulture at these various sections were interviewed: Orchardists, College and Experiment Station workers, horticultural inspectors, cannery managers, jobbers, wholesalers, retailers, and consumers of fruit manufactured products. The committee was especially fortunate in being received throughout its journey in a frank and helpful spirit.

SUMMARY OF OBSERVATIONS APPLIED TO UTAH.

In the following summary the writers do not pretend to give detailed information concerning the manufacturing of fruit products, nor do they even attempt to elaborate on the details of co-operative organization. The main question at issue is, "What are the economic possibilities of immediately establishing successful fruit product manufacturing plants in the intermountain sections based on the fruit crops already established?" This report should not be looked upon as personal recommendations, but rather as an attempt to systematically arrange facts and figures bearing on this subject. Their interpretation will no doubt vary somewhat with the viewpoint of the reader.

This problem is not peculiar to Utah for similar conditions confront the orchard sections of the entire intermountain and northwestern states. Meetings and conventions are being held in all interested districts where this great question is the issue.

Much valuable information concerning co-operative canning factories was gathered from the northwestern states. To be sure there have been numerous cases of failure in this endeavor throughout the aforementioned states. Nevertheless, there are always many valuable lessons to be learned from the mistakes of others. By investigating the causes of failure of many of these factories, the committee has learned much concerning the economic side of this industry. Therefore, in applying our information to Utah, we will keep in mind some of the causes of failure in the past by affecting institutions of this sort.

From reliable information it was learned that forty-three co-operative canneries had been started in the Northwest during the last eight years. Today only eighteen are in operation, and not a single one under the original management. In every case the failure can be attributed to one or more of the following causes:

1. *Insufficient capital.* Many small factories have been built with only capital enough to erect a building and perhaps buy part of the machinery. All running expenses during practically the first year of the factory's existence was paid for by borrowed money. (Little or no interest should be expected on capital invested in a canning factory during the first year while the business is becoming established.) This high rate of interest charged on such loans proved more profitable to the banking houses than the stockholders of the canning factory. Where insufficient capital has been a serious factor, the growers have been obliged to wait too long for their pay and much discontent has thus been started among the producers. Most fruit growers are not in a position financially to produce the crop and then wait until it is canned, sold and delivered to the jobber before they receive their pay. An extreme case of this kind was seen where a factory capitalized for six hundred dollars, did a forty-five thousand dollar business in 1913 and then dropped to seventeen thousand dollar business in 1914, and is now facing reorganization or the receiver.

As capital has been one of the prime causes of failure, it is only turning language about to say that this should be one of the most carefully planned factors in such a proposed industry. In discussing this matter, Professors Lewis and Brown* write as follows:

> "Just what it will cost to start a small cannery will depend so much upon local conditions that it would be impossible to give any but wide approximations. Some have made the start in a small way on $5,000.00 or $6,000.00 capital, but have had to increase this amount materially as the needs of the business demanded it.
>
> "Often it may seem advisable to rent a building not especially adapted to cannery operations and to run shorthanded on special cannery machinery for a while until fruits come into bearing and the size of the business increases. It should be the purpose of the association to increase this volume of produce just as rapidly as possible.
>
> "If 1,000,000 pounds of fresh produce is taken as the minimum economic unit, then the cost of buildings, equip-

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*Fruit and Vegetable By-products, by C. I. Lewis and W. S. Brown, Oregon Bulletin No. 128.

ment, and working capital for such a plant will amount to something like the following: From $7,500.00 to $15,000.00 for buildings and equipment, depending in a large measure upon the produce to be canned, the canning of vegetables costing considerably more for preparation than the canning of fruits; and from $5,000.00 to $15,000.00 for running the factory until such time as the canned goods shall have been turned into money, making a total of from $12,000.00 to $30,000.00.

"All the money needed for permanent improvements and working capital for the first season should be raised if possible; but, if a cannery has its real estate, buildings and equipment all paid for, it will have no difficulty in borrowing all the working capital it needs from banks."

2. *Lack of expert labor* in manufacturing and selling the product has played its part in wrecking many a factory. Capable men in this endeavor are few and naturally command a good salary. Trying to save too much on the manager's salary has been a stumbling block of more than one factory. An experienced processor is equally as important as a capable manager.

MANAGEMENT.

The business success or failure of the factory will largely depend on three men: The business manager, the bookkeeper and the processor.

The business manager should preferably be an experienced man in all sides of the canning business. He should be thoroughly familiar with every step in the business from receiving the green product to selling the manufactured article to the best advantage. He should be familiar with canning machinery, varieties of fruit and the conditions under which they are produced.

His duties should not end in being able to run the factory at a profit, he should be closely in touch with the growers and have the respect and admiration of the man who grows the crops. A thorough knowledge of selling methods and the ability to dispose of the produce to the best advantage is equally as important.

Salaries paid will depend on the volume of business. Good results are frequently obtained when the manager is one of the important shareholders of the business. His salary is sometimes partly determined upon by a per cent of the gross income from the business.

The bookkeeper should devise a system of accounting which will show at a glance the detailed economic standing of the establishment.

The processor. The quality of the factory's output, however, rests upon the processor, for he is responsible for every detail of preparing and canning the fruit. This man should be thoroughly familiar with the making of jams, jellies and all sorts of preserves, as well as the canning of fruit. A first-class pack is the constant demand of the trade, and the processor alone is responsible for the way the factory meets this demand.

In the starting of any new factory, one of the chief obstacles to be confronted is the establishment of the new brand of canned goods in the wholesale and the retail trade. Housewives stick to the old familiar brands because they are sure of the contents of the can by reading the label on the outside. A certain brand means the same grade article this year as it did last year. The consumer is loath to try a new product if the old brands are giving satisfaction. One of the important points to be observed in introducing a new article is to have a fixed standard of high quality. A fluctuation or slip in this grading may ruin the trade of the new factory at the start. Here we see impressively the important part played by the processor.

3. *Too small a manufacturing unit* has been a serious handicap in the case of some establishments. In such cases the overhead expenses are apportioned among such small outputs as to make the cost of production too high for a profitable disposition of the product. A single example will illustrate this point: A factory in eastern Oregon is able to put out a case of cherries at a labor, fuel, and overhead expense cost of one dollar and three cents. This is a large factory, capitalized at forty-five thousand dollars. A small factory close by, capitalized for six thousand dollars, put up a case of cherries of the same grade at a cost of one dollar and ninety-three cents per case, or a difference in favor of the large factory of ninety cents per case of cherries.

Upon this subject, Professors Lewis and Brown* write as follows:

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*Fruit and Vegetable By-products, by C. I. Lewis and W. S. Brown, Oregon Bulletin 128, p. 7.

> "Canneries are often started, of course, with not more than one-half a million pounds of fresh produce in sight for canning purposes, and with small capital. Such a start should not be made, however, unless, after a careful canvass among the growers, it is seen that the volume of fruits and vegetables will be increased in the near future. Just what the minimum amount of produce must be to leave a profit in canning will depend upon the local conditions, such as the kind and quantity of fruit and vegetables, cost of buildings, real estate, etc. But it may be taken as a general average that the cannery will need to handle about a million pounds of fresh produce to do the work economically and to return what it should to the grower."

Some factories have labored under the disadvantage of having too short an operating season. While a diversity of crops means an increased investment in machinery, this is more than offset by keeping the factory running during a longer season. Thus the fixed charges, such as interest and depreciation on buildings, interest and taxes on real estate, etc., is not borne by a single crop.

With reference to the volume of business a cannery should do, Mr. G. H. Tinker, manager of the Benton County Cannery Association, writes as follows:*

> "Our experience has proved to my satisfaction that you cannot have canneries at every coss roads. I am aware that very many people hold to the opinion that the small cannery is the one thing necessary to solve the marketing problem. I got this notion out of my bonnet long ago. Remember that the minute you get into business you have to compete with the established canneries. Therefore, I think that while we all believe in co-operation, the best way to compete with the commercial canner is to get upon a commercial basis ourselves. Arrange to serve a wide area, thus securing a larger membership and more product to insure a steadier run over a larger period."

4. *Lack of a uniform pack* has been the downfall of some establishments which otherwise should have been a success.

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*Co-operative Canneries, by G. H. Tinker, "Better Fruit," April 1914, p. 9.

The buyer of fresh fruits has a right to be sensitive to this factor, and in buying a dozen boxes or a carload of fruit from a packing establishment, it is to be expected that every box of a certain grade will turn out the same as every other box similarly labeled. If the fruit is not of a uniform grade, the buyer's confidence in the seller is destroyed. Another establishment is looked for when more fruit of this type is again purchased. This principle is doubly important in a manufactured product. Suppose no two loaves of bread from a bakery are of the same quality. Supposing the small boy finds one package of a certain kind of gum highly flavored with spearmint, and the next package almost lacking in this flavor. He soon changes his brand of gum. This is exactly the attitude the jobber or wholesaler takes toward a brand of canned goods which proves to be non-uniform in grade.

Trying to make a big profit on both growing and canning the fruit has been the downfall of some of the co-operative associations. If the cannery had been looked upon in the light of a packing house, as a means of marketing the crop, and therefore pay only a moderate interest, the growers might have continued to be satisfied with the industry.

The foundation of a successful fruit canning industry is a group of well satisfied growers who are making a good living growing fruit. A permanent industry cannot be built on any other foundation. Dissatisfied growers have wrecked more than one cannery. This dissatisfaction has been just, no doubt, in many cases. Fruit growers cannot be expected to take an optimistic view of the canning industry, if it does not bring returns for the fruit.

The grower who produces fruit for the cannery must be situated to do quite a volume of business on a small margin. There are no fabulous prices to be obtained by disposing of fruit in this manner. The prices usually fall below the wholesale prices of similar fruit during years when the fresh product has a normal movement in the market. On the other hand the factory prices rule higher than the fresh fruit market during the lean years for the green product.

The grower of fruit for factory purposes, therefore, may expect a moderate but consistent price for his fruit. To produce it at a profit his orchard must be of sufficient size to support the most modern orchard equipment and labor-saving devices. The orchard must be run at its maximum efficiency, and the owner must be a close student of "cost of production." Under these conditions the fruit grower may expect to prosper and make a good living producing fruit for factory purposes.

The average prices for fruits at the well managed factories are as follows:

FRUIT	PRICE		
Apples	$5.00 - $10.00	per	ton
Apricots	30.00 - 35.00	"	"
Cherries	80.00 - 120.00	"	"
Peaches (free)	17.00 - 20.00	"	"
Peaches (cling)	20.00 - 30.00	"	"
Pears	18.00 - 30.00	"	"
Currants	.03 - .04	"	lb.
Gooseberries	.02 - .03	"	"
Strawberries	.04 - .04½	"	"

A good contract for the protection of both the grower and the factory is one of the essentials for success. The factory contracts with the buyer before the fruit is picked from the tree to deliver certain grades and amounts of the canned product. It is self-evident then that there must be a careful estimate of the crop far ahead of the season, and the factory must be absolutely sure of receiving the entire product of the growers as contracted. There is a temptation on the part of the orchardist to sell to the fresh fruit market when prices are high, thus breaking the contract with the factory. This has been one of the stumbling blocks along the downward path of many co-operative factories in the past. The only remedy is a contract in such form that there will be more of a penalty in breaking them than any gain which may be derived from such an action. Both parties concerned should be equally protected.

COMPETITION.

In recognizing the competition which exists between Utah and the states visited, or the competition which may be developed, the following observations must be kept clearly before us:

The vast majority of the orchards of deciduous fruits in California were planted explicitly for canning and evaporating purposes. The varieties are thus adapted to this industry. This is not true of the orchard planting in Utah. Some varieties of fruit which are well adapted to the fresh fruit markets, such as the Elberta peach, are poorly adapted to manufacturing purposes. As a canning peach the Elberta must go in the low grade table fruits or in the pie grade.

After an earnest search in four different states, during a period of three weeks, not a single factory manager, processor or jobber was interviewed who claimed to be able to can or who had ever seen the Elberta peach canned in such a way as to make a first grade article. The trade demands of a first-class peach are that it shall be a bright yellow, firm peach in a colorless liquid. All canners seem to agree that the Elberta becomes loose and fibrous, after being put up, and the liquid becomes cloudy.

This apparently is a serious handicap to the immediate relief of the peach situation in this State. We will all agree that the market conditions surrounding our vast areas of Elberta peaches are more imperatively in need of readjustment than any of the other fruit marketing problems confronting us.

If peaches are made one of the main crops in a Utah cannery today, it will necessitate a considerable change in the varieties now growing as a reputation cannot be built on low-grade of canned fruits. To be sure there is a big trade in some localities in canned pie peaches. The Elberta can very likely be canned in such a way as to make a good article of this grade. Our specialties or leading articles of production should be such crops as are best suited to our natural conditions, but for best meeting competition, however, these specialties should compare favorably with the output of other sections. The high grade articles help to sell the poorer ones. It is necessary, therefore, to specialize in other kinds and varieties of fruit to make our reputation.

Another serious disadvantage with our solid blocks of Elbertas is the fact that the entire crop must be handled during a very short time. With variation in soil, exposure and cultural methods possibly the harvesting season could be spread out over a period of three weeks. During this short period it would take immense factories to handle the crop. In contrast to this the peach canning sections of California have from two to three months to handle their peach harvest.

VARIETIES OF PEACHES FOR CANNING.

It is a well known fact among the jobbers and wholesale merchants that the demand for canned "clingstone" peaches is increasing, while the "freestone" demand is decreasing. One prominent factory manager informs us that "ten years ago eighty per cent of the canned peaches were "freestones." Today eighty per cent are "clingstones," and the proportion of "clingstone" will apparently increase in the future. The most widely planted varieties of peaches for canning are.

Freestones—Lovell, Muir, Salway, Crawford.
Clingstones—Tuscan, Phillips, Lemon, Sim's.

CHERRIES.

The Cherry varieties now growing in Utah, particularly the Napoleon (Royal Ann) and Knudson, are well adapted to factory purposes. The former variety especially is in good demand as a canned product, and seems to have a bright future in this industry. The prices paid to the grower return him a good profit, and there is an increasing demand on the part of the wholesalers and jobbers. This should be one of the main crops produced for factory purposes in Utah.

Utah cherries stand second to none as a fresh fruit, and can doubtless be canned in such a way as to successfully compete with the world. There are somewhere near two thousand acres of cherries growing in this state at the present time. Quite a proportion of this acreage is planted to the most desirable canning cherry in existence, the Napoleon (Royal Ann). This is one of the most hopeful fruit crops growing in Utah at the present time, on which to found a canning factory. A high-grade pack of cherries will help materially in building up a reputation for our canned fruit industry.

SMALL FRUITS.

Small fruits as a canned product seem to have a bright future. On every hand an optimistic opinion was heard concerning the outlook for canned and preserved raspberries, strawberries, currants, gooseberries, etc. The pices to the producer of this class of fruit warrants a reasonable return. Although the "small fruit" industry of the State includes only four per cent of the area in fruit, this nevertheless amounts to about eighteen hundred acres, and enlarged might form a very substantial crop acreage for the promotion of fruit produce factories. Small fruits can be brought into bearing in two or three years, and an acreage provided to meet any demands of a cannery.

The large successful canning factories in California are surrounded by immense areas of fruit planted explicitly for the factory.

It seems doubtful if a similar industry can be built up elsewhere based upon the production of fruit primarily for the market, with the canning possibilities as secondary or merely an afterthought. In this regard Professor C. I. Lewis writes as follows:*

> "We have too much of certain grades to sell to advantage fresh, but we do not have enough of certain types to enable the canneries and other by-product plants to work to the best advantage.
>
> "We have got to get away from the idea that the by-product plants are simply intended to use low-grade material. While certain types of plants, such as vinegar works, jell factories, etc., can utilize certain low grades, if the canneries are furnished with the high grades of fruit they will be able to make a much higher grade of product, and will be able to compete successfully with other institutions of the same type."

The supply to the canning factory must be constant, as much of this fruit is sold as a canned product before it is picked from the tree. Can the output of a factory be kept constant if the fruit is to be sold fresh if possible, and canned only when market prices are unsatisfactory? It is as important for the factory to have high grade fruit as it is for the fresh fruit market, and the supply must be constant from year to year.

FREIGHT RATES.

Freight rates by both water and rail would confine the markets for Utah canned fruits to the intermountain and western plain states. With a thirty cent water rate from the Pacific Coast to the Atlantic, the intermountain region is shut out of all seaport markets and territory tributary to water transportation. This does not, however, prohibit the supplying of our home and nearby markets with fruit products manufactured in the intermountain region.

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*The Problem of Utilization of Our By-products in Oregon, C. I. Lewis, "Better Fruit," April, 1914, p. 14.

To supply these available markets, however, would mean an immense output. As noted in the beginning, Utah annually imports nearly a quarter of a million dollars worth of manufactured fruit products. The condition of affairs in Montana and Idaho can be judged from the following record of their 1913 importations:

Montana imported in 1913—
  60,000 cases of canned fruit,
  40 cars of apple cider vinegar,
  20 cars of apple cider.
Idaho imported in 1913—
  185 tons dried apples,
  75 tons dried prunes,
  150 tons dried peaches,
  100 tons jams, jellies, etc.
  950 tons canned fruits and vegetables.

EVAPORATED FRUIT.

Turning now to the evaporated fruit products, the sun evaporation of peaches and apricots in California presents a competitor which will be hard to successfully meet by any artificial methods. On the question of evaporating the Elberta peach, Roeding* sums up the situation as follows:

> "* * * The Elberta peach is used almost exclusively in California for either shipping green or for drying. * * * I doubt very much if you can compete with an evaporator with our peaches that are sun dried. It is possible, however, if you can arrange to peel your peaches, that you will find the prices so much better than for peaches that are dried in the usual manner in California, and the very fact that in addition to this the fruit will be much cleaner than the dried peaches that are ordinarily delivered by the farmers in California, might make this experiment well worth a trial."

On the subject of peeled peaches, Roeding says, further:

> "* * * In an experiment made with Lovell peaches (peeled by the lye process), the fruit was carefully

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*George C. Roeding, Fresno, California.

> weighed—the unpeeled peaches dried away from 100 pounds to 24, and the peeled to 16. In each instance the weight of the pits was eight pounds. * * *
>
> "Even in this year of low prices for dried peaches, a few growers who have been engaged in peeling peaches in a small way have had no difficulty in selling their product at from 10c to 12½c per pound."

At Hillsboro and Sutherland, Oregon, in the factories of the Food Products Company, we found fruits and vegetables being evaporated by a process which presents new features that warrant further investigation.

Apple evaporators and cider and vinegar factories have reached large proportions in some of the eastern states. Many of these factories, however, have been idle during the past year, and the trade in evaporated apples is in anything but a healthy condition. On the subject of drying of apples, Mr. D. A. Snyder of Dayton, Oregon, writes as follows concerning the market conditions:*

> "The market for evaporated apples is limited. Of the 2,000 cars produced in New York in 1912, 600 cars were still on the market a short time ago."

A limited amount of apples are being canned at present, with a very moderate demand in market, which could be very easily overstocked. Speaking of canned apples as a factor in marketing the apple crop of California, Mr. C. H. Bentley, manager of the California Fruit Canners' Association, writes as follows:*

> "On suitable land, and in certain locations, growers have prospered, but with the enormous increase in the acreage of Oregon and Washington, California has serious competition, and the relatively small demand for canned apples offers no great aid to the solution of this serious problem."

This, combined with the starvation prices of from $2.00

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*Drying of Apples an Ancient Custom, by D. A. Snyder, "Better Fruit," September, 1914, p. 25.

*The Canner's Interest in the Fruit Industry, C. H. Bentley, "Better Fruit," September, 1914, p. 9.

to $5.00 per ton for cider apples and $5.00 to $8.00 per ton for evaporated stock offers little hope to the apple grower for an outlet for low-grade fruit. The shipment of low grade apples in bulk has proven more profitable than an evaporator to the Utah growers in the past.

Natural conditions in Utah relative to fruit production are as favorable as in any of the sections competing with this state. Soil, water and climatic conditions are in our favor. As mentioned before, we are somewhat handicapped in regard to transportation. Our local and nearby markets, however, offer a fertile field for development. At the present time, this section is at a disadvantage in its establishment of peach orchards composed of varieties poorly adapted to manufacturing purposes. It is doubtful if the Elberta peach grower has any material relief in sight in the shape of fruit product factories. This is partly offset, however, by our Napoleon cherries and small fruits well adapted to canning.

The apple growers have no reason to expect any great reformation in the marketing conditions of their crops due to canneries or evaporators. Much improvement can be made, however, in stricter grading and better packing of our Fancy and Extra Fancy brands. Study must be given the "C" grade to market it more cheaply in a different container than the fancy brands. Our "C" grade should not compete with our Fancy brands as a boxed apple as has occurred in the past.

Our selling organization can be still further perfected, and with improved storage facilities, the production of boxed apples in Utah should continue to be one of our profitable investments.

ACKNOWLEDGMENTS.

In reporting our findings, the committee wishes to acknowledge the valuable assistance and courteous treatment accorded us throughout our trip of investigations by the following:

Doctors A. J. Cook, State Commissioner of Horticulture, Sacramento, California; and J. Elliott Coit, University of California, Berkeley, California; Professors C. I. Lewis, Oregon Agricultural College, Corvallis, Oregon; A. V. Stubenrauch, University of California, Berkeley, California; E. J. Wickson, University of California, Berkeley, California; and Messrs. E. P. Taylor, Field Horticulturist, Boise, Idaho;

C. K. Macey, State Horticultural Inspector, Boise, Idaho; B. F. Hurst, Mansville Fruit Company, Boise, Idaho; Judge Fremont Wood, Fruit Grower and Vinegar Manufacturer, Boise, Idaho; L. V. Patch, Canner, Payette, Idaho; A. J. Shearer, Fruit Evaporator, Payette, Idaho; E. H. Shepard, Editor "Better Fruit," Hood River, Oregon; J. C. Skinner, Portland, Oregon; A. Rupert, Canned Goods Broker, Portland, Oregon; Robert Johnson, Fruit Grower and Evaporator, Corvallis, Oregon; J. C. Holt, Manager Eugene Fruit Growers Association, Eugene, Oregon; C. H. Bentley, Manager, California Canners' Association, San Francisco, California; Marion Welch, Fruit Canner, Los Angeles, California; E. H. Kennedy, Fruit Canner, Los Angeles, California; George C. Roeding, Nurseryman, Fresno, California; Sargeant & Burnett Evaporator Company, Payette, Idaho; Dalles Fruit Growers' Association, The Dalles, Oregon; G. H. Tinker, Manager, Benton County Cannery Association, Corvallis, Oregon; J. L. Nagle, Manager, California Fruit Exchange, Sacramento, California; D. B. Pressler, California Fruit Canners' Association, Sacramento, California; Libby, McNeill & Libby, Canners, Sacramento, California; C. C. Michener, President, Food Products Company, Hillsboro, Oregon; L. H. Stewart, Manager, Central Canning Company, Sacramento, California.

Diversified Fruit Growing.

By W. W. Knudson, Brigham, Utah.

The present status of the fruit industry in Utah and in fact the whole west seems to be one of much uneasiness, especially on the part of those who have specialized extensively in one or two varieties of fruit. Most young orchards, which have recently come into bearing in Utah, as well as in many other fruit growing sections of the United States, are highly specialized. For example, in the peach, more than 90 per cent of the total acreage is planted to Elbertas. There seems to be an over-supply of this variety during its harvest, while during the greater part of the early peach season, peaches in many places are almost at a premium. Peaches are very perishable, and we are a long distance from the larger markets, and it costs a relatively high figure to place our peaches on the eastern markets, and also involves considerable expenditure to keep them iced while enroute. Not only are the costs large, but we run great risks of losing much of the fruit because of uncertain market conditions. Many things can be enumerated on the evils of so many peaches of one variety on the individual farms, which constantly brings up the question, "What are we going to do?" This is a very hard question for any one person to solve. The solution lies in the hands of each individual grower, and he should commence to figure on what "he" is going to do. In the first place the peach industry does not afford a long period of work. The whole Elberta crop is harvested in two weeks time. Outside of the harvesting, this industry requires but little work, as most of the season one man can handle a good many acres of peach orchard, but during the harvesting period, many men are required because of the perishable nature of the crop. This places a premium on labor at this period, while during the remainder of the year there is no work to offer the laborers, and the owner is out of a job at least one-third of the time. To overcome this, each grower should try to select such crops that he is employed as much of the time as possible doing productive work.

It appears to me that this can be done by diversification. This paper does not attempt to show what lines should be followed, as there are so many things that growers could work into. It does not advise tearing up all the peach orchards at once because it takes quite a long time to establish one's self in a new line, so be conservative and work into new things gradually. Before making any radical changes, think the proposition over carefully, but don't hold to the old superstitions laid down by our ancestors too closely, because there might be other new ideas concerning cultural methods, and also many new varieties that are worth testing out. For example, if you want to plant a strawberry bed, don't plant the Marshall because your neighbor has it, but find out if the Marshall is a desirable berry and is just what you are looking for. If it isn't, plant the one that comes more closely to your ideal. A good thing to do is to test out the new varieties as they come along. You can get a fairly good idea of what a new variety is by growing a few of the plants, or trees in a small way. This probably does not apply to many, but in the opinion of the writer is very essential to meet the highest degree of success.

An ideal diversification is one where not only the labor, but also, the income is extended over a considerable portion of the year, hence it should consist of early, medium and late crops. The early crops not only afford employment, but furnish ready cash, which comes in mighty handy, and it prevents borrowing, which is often expensive and burdensome. Again by having a succession of crops the grower keeps in contact with the buyers and if his products are first-class and up to market requirements, he gains a reputation, which undoubtedly stimulates the sale of his main crops. A diversified fruit farm always draws heavily on the local and wagon trade, because a man soon gains the reputation of "having a constant supply" and the buyers depend on him for what they want.

The farm with which the writer is connected furnishes a good example of the facts he wishes to convey, and has given good returns the past three years, regardless of apparent depression. It consists of aproximately 40 acres, including 20 acres of waste land used as pasture. The place is located about one-quarter of a mile north of the O. S. L. Depot, Brigham, Utah.

The main crops grown are small fruits, cherries, peaches, plums and vegetables. On this place new crops are constantly being tried, and many varieties are in evidence. Two men are employed most of the year, and during the harvest extra labor is required.

The plantings are so arranged that there is always one portion of the farm that is aged, middle aged and young orchard, one in bush fruits, and another used for annual crops such as tomatoes, melons, peppers, egg plants and squash. When the older portion becomes too aged it is cleared and planted to vegetables for three or four years, then it is cleared again, planted to trees or bush fruits. In between the young trees such crops as peas, beans and squash, etc., are planted for three to four years. In this way a system of rotation is maintained, and the soil has an opportunity of getting a partial rest. There is, also, sufficient pasturage on the lower end of the place to take care of the horses during the summer months. There are, also, three acres of alfalfa which help supply some forage for winter. The following crops are grown:

Fruits	Varieties	Time of Harvest
Strawberries	Wm. Belt	June 1 to 21.
“	Chesapeake	June 1 to 21.
Raspberries	Marlboro	June 20 to July 10
Cherries	Purple Guigne	June 1 to 15
“	Black Tartarian	June 15 to 25
“	Centennial.	June 20 to July 5
“	May Duke (Pie)	June 20 to July 5
“	Hortense (Pie)	June 20 to July 5
“	Napoleon	June 20 to July 5
“	Bing	June 25 to July 10
“	Windsor	June 25 to July 10
“	Black Republican	June 25 to July 10
“	Montmorency (Pie)	June 15 to July 5
“	Lambert	July 1 to 15
“	Knudson (Pie)	July 10 to 25
Dewberries	Lucretia	July 1 to 25
Apricots	Jones	July, 5 to 20
“	Routier	July 15 to August 1
Plums	Peach	July 20 to August 10
“	Climax	July 20 to August 10
“	Bradshaw	August 5 to 25
“	Green Gage	August 10 to 30
“	Satsuma	September 1 to 15
“	Wickson	September 1 to 15
“	Pond	September 10 to 25
“	Giant	September 10 to 25
“	German Prune	September 15 to 30
Peaches	Red Bird Cling	July 20 to August 5
“	Hales Early	July 25 to August 15
“	Early Elberta	August 20 to Sept. 5
“	Elberta	September 1 to 15
“	Sellers Cling	September 10 to 25
Apples	Red Astrachan	July 15 to August 15
“	Wealthy	August 15 to Sept. 10
“	Jonathan	Fall and Early Winter
“	Winesap	Late Winter
Grapes	Delaware	August 20
“	Concord	September 1 to Frost
“	Niagara	September 1 to Frost

Vegetables	Varieties	Season
Peas	American Wonder	Early
“	Gradus	Early to Medium
“	Stratagem	Late
Beans	Golden Wax	Early.
“	Wardwells Kidney Wax	Medium
“	German Wax	Late
Cucumbers	Arlington's White Spine	
Summer Squash	Patty Pan (White)	Summer
Tomatoes	Bonny Best	Early
“	Stone	August to Frost Late
Peppers	Chinese Giant	August and September
“	Cayenne	August and September
Egg Plant	Black Beauty	August and September
Squash	Hubbard	Winter
“	Pike's Peak	Winter

Plantings.

Fruit	Block	Variety	No. Trees		Acreage
Peaches	1	Mixed	192		
"	2	Elberta	851		
"	3	Early Elberta	434		
				1,477	9.09
Apricots	1	Jones	12		
"	2	Routier	14		
"	3	Routier	42		
				68	0.41
Cherries	1	Mixed Sweet	150		
"	2	Mixed Sweet	114		
"	3	Lambert	168		
"	4	Mixed Sour	456		
				888	5.12
Plums	1	Mixed	405		
"	2	Mixed	55		
				460	2.43
Apples	1	Mixed	102		0.67
Strawberries		Chesapeake			0.60
Raspberries		Marlboro			0.75
Dewberries		Lucretia			1.00
Tomatoes*		Early			0.12
"		Stone			1.50

*The acreage of other vegetables is comparatively small.

Records have been kept of the cash receipts and cash expenditures of the place but a complete inventory of the whole farm has never been taken. The following figures will show the cash receipts and expenses. Included in the expense account is the labor for a drainage system, to improve the waste land, which is materially increasing the value of the farm. The labor expense is, therefore, higher than was necessary to work and harvest the crops. The farm is increasing in value every year.

Following are the results for the years 1912, 1913, and 1914:

Gross Returns from Sale of Crops.

	1912	1913	1914
Strawberries	$ 309.60	$ 277.30	$ 158.70*
Peas	53.70	42.40	57.30
Cherries	843.81	970.45	1,124.15
Raspberries	157.05	315.70	160.95
Currants	35.45	......	......
Beans	43.00	39.55	29.15
Apricots	35.90	152.80	116.45
Cucumbers	50.30	32.95	23.80
Dewberries	301.25	164.90	157.30
Apples	15.20	38.45	......
Peaches	185.25†	483.75	1,294.40
Squash	25.45	17.80	13.90
Plums	295.00	379.90	411.35
Peppers	53.25	75.70	45.65
Tomatoes	370.90	358.30	459.30
Egg Plants	5.45	8.20	7.35
Watermelons	6.20	27.75	16.45
Cantaloupes	26.05	58.80	17.40
Grapes	14.80	31.25	8.30
	$2,827.61	$3,475.95	$4,101.90

*Acreage decreased 1914.

†The increase is due largely to fact that peach orchard just commenced to produce in 1913. Peach fungus destroyed crop in old orchard 1912. Old peaches uprooted winter of 1912 and 1913.

Cash Farm Expenses.

	1912	1913	1914
Labor	$ 963.67	$1,120.10	$1,402.10
General expenses	56.95	53.35	67.25
Boxes, etc.	182.25	261.63	274.70
Seed	12.00	13.25	11.00
Hay and grain	60.00	65.00	80.00
Plants, etc.	25.00	35.00	30.00
Taxes	50.00	50.00	50.00
Depreciation on equipment	100.00	100.00	100.00
Total expense	$1,449.87	$1,698.33	$2,015.05

	1912	1913	1914
Total Income	$2,827.61	$3,475.95	$4,101.90
Total Expense	1,449.87	1,698.33	2,015.05
Balance*.......	$1,377.74	$1,777.62	$2,086.85

*Owner's return which represents his interest on investment and labor income.

Approximate Prices Received for the Products.

	1912	1913	1914
Strawberries	$1.25 per cs.	$1.25 to $1.50 cs.	$1.50 to $2.00 cs.
Raspberries	$1.00 to $1.25 cs.	$1.00 to $1.25 cs.	65c to $1.25 cs.
Peas	4c to 6c per lb.	4c to 6c per lb.	3½c to 6c lb.
Sour Cherries	3c per lb.	3c to 3½c lb.	3c per lb.
Sweet Cherries	5c to 6c per lb.	4c to 6c lb.	3½c to 5c lb.
Beans	3c to 6c per lb.	3c to 6c lb.	3c to 6c lb.
Cucumbers	5c to 15c per doz.	5c to 20c doz.	5c to 20c doz.
Dewberries	$1.00 to $1.25 cs.	$1.25 cs.	$1.00 to $1.25 cs.
Peaches	40c to 50c bu.	30c to 50c bu.	40c to 50c bu.
Plums & Prunes	1c to 2c lb.	1c to 3c lb.	1c to 2½c lb.
Bell Peppers	8c to 10c doz.	4c lb.	3c to 4c lb.
Cayenne Peppers	3c doz.	3½c doz.	3c doz.
Fancy Tomatoes	1c lb.	1c to 2c lb.	1c lb.
Cannery Tomatoes	½c lb.	½c lb.	½c lb.
Egg Plant	50c doz.	45c doz.	45c doz.
Watermelons	$1.50 crt.	$1.50 to $2.00 crt.	$1.25 crt.
Cantaloupes	60c to $1.75 crt.	65c to $1.50 crt.	60c crt.
Grapes	3c to 4c lb.	3c to 4c lb.	4c lb.
Apricots	2½c lb.	2c to 2½c lb.	1½c to 2c lb.

Note—The above prices represent the amount received for fruit without the cases.

The above figures bring out some facts to illustrate the possibilities in diversification. There are undoubtedly many places that would show just as good, or better, results with other combinations of crops, or by combining livestock industry with fruit. The market would not justify all growers in following the same system of cropping, but there are numerous types of diversification, so there is a chance for all.

In order to account for the success or failure of a farm it is necessary to measure different factors of the business and compare them with some standard. The factors that usually affect the profits most are *size* of business, *diversity* and *production*. The efficiency of the feeding of the necessary livestock and the care and depreciation of the tools affects profits. If the size and diversity are correct, the labor efficiency is usually good, but it is often found to be the case, that a farmer keeps too many horses and occasionally hires too much help. Inefficient use of capital is a cause of poor results on some farms, more often on farms of city persons than of real farmers. The amount of fertilizer and manure used *helps* the crop yields on the farm and, also, suggests what the future yields may be.

SIZE.

The size of the business is always determined by the crops grown and the intensiveness with which the land is tilled. It should be large enough, however, to require productive work for at least two men. There should be enough animals to use the pasture land that cannot be cropped and to work up all straw, stover or other roughage, or enough animals to make one animal unit for every three to five acres of crops, in order to keep up the fertility. This is not as important where manure can be obtained from other sources. One animal unit,—equals animals equivalent to a horse in manure production.

There are many reasons why the size of the business should not be too small. A large business has the following advantages over a small one:

More efficiency in use of labor, horses, machinery, capital, and in buying and selling.

DIVERSITY.

Nearly all kinds of farming requires rotation of crops, if yields are to be maintained. In orcharding the crops remain in the ground a long time but one generation of peach trees should not be followed by another generation, etc. Again the farmer is so dependent on weather, pests, and prices that he should hesitate to take the chance of a total failure, which is often the case where he has but one or two products to sell. If there are several important crops, they are not all likely to fail the same year. A farmer must pay his living expenses, labor, interest, taxes, and farm running expenses. A failure when he has but one cash product is a serious matter, as he will have to carry all these expenses for another year.

Advantages to Diversification:

1. Distributes the income.
2. Distributes the labor.
3. Helps keep down pests.
4. Lessens the risk of total failure.

PRODUCTION.

This has always been emphasized. Often it has been emphasized to such an extent that quantity has been increased without regarding quality. The aim should be to grow the maximum of product with excellent quality at the minimum cost, seeing that proper cultural methods are followed.

Nursery Licenses.

List of Licensed Nurseries.

Name	Address	Expires
Auerbach Co.	Salt Lake City, Utah	March 29, 1914
Brown Bros.	Rochester, N. Y.	March 10, 1914*
F. W. Brow Nursery Co.	Rose Hill, N. Y.	March 3, 1915
Brigham Christensen	Vernal, Utah	March 10, 1914
N. C. Christensen	Lehi, Utah	March 10, 1915
Davis County Nursery	Roy, Utah	March 10, 1914*
Dixie Nursery Co.	Hurricane, Utah	January 1, 1914
Henry A. Dreer	Philadelphia, Pa.	September 19, 1915
S. Gleason & Son	Kaysville, Utah	March 10, 1914*
Gabbott Bros.	Salt Lake City, Utah	March 10, 1914*
Albert Glover, Prop., Jordan Nurseries	Sandy, Utah	March 10, 1913*
German Nurseries	Beatrice, Neb.	November 1, 1915
Griesa Nurseries	Lawrence, Kas.	August 30, 1914*
Chas. B. Harper	Pleasant Grove, Utah	March 11, 1913
N. S. Hansen	Logan, Utah	March 10, 1914*
Huntsville Wholesale Nursery	Huntsville, Ala.	March 10, 1913
Idaho Nursery Co.	Weiser, Idaho	September 29, 1914*
Inter Mountain Nursery Co.	Brigham City, Utah	March 10, 1913*
D. E. Law	Salt Lake City, Utah	November 25, 1915
D. M. Moore	Ogden, Utah	March 10, 1914*
L. L. May & Co.	St. Paul, Minn.	December 16, 1913
Wm. H. Moon Co.	Morrisville, Pa.	March 1, 1915
Northern Colorado Nursery	Loveland, Colo.	March 10, 1915
Porter Walton	Salt Lake City, Utah	March 11, 1914*
S. D. Radmall	Pleasant Grove, Utah	February 16, 1915
C. H. Smith (Smith Bros.)	Centerville, Utah	March 10, 1914*
Smith Bros. (Earl & Melvin)	Pleasant Grove, Utah	March 11, 1913
Stark Bros. Nurseries & Orchards Co.	Louisiana, Mo.	August 4, 1915
Sherman Nursery Co.	Charles City, Ia.	March 27, 1914
Toppenish Nursery Co.	Toppenish, Wash.	March 17, 1914*
Utah Nursery Co.	Salt Lake City, Utah	March 10, 1914*
Washington Nursery Co.	Toppenish, Wash.	December 12, 1913
E. F. Whaley, Prop., Brigham City Nursery Co.	Brigham, Utah	March 13, 1915
Robt. Wills (State Nursery)	Salt Lake City, Utah	March 10, 1913*
Wild Rose Orchard Co.	Spokane, Wash.	April 24, 1913

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*Application for renewal pending.

License Applications Pending November 30th, 1914.

Brown Bros.	Rochester, N. Y.
B. H. Bower	Provo, Utah
Davis County Nursery	Roy, Utah
S. Gleason & Son	Kaysville, Utah
Gabbott Bros.	Salt Lake City, Utah
Albert Glover, Prop., Jordan Nurseries	Sandy, Utah
Griesa Nurseries	Lawrence, Kas.
N. S. Hansen	Logan, Utah
Idaho Nursery Co.	Weiser, Idaho
Inter Mountain Nursery Co.	Brigham, Utah
D. M. Moore	Ogden, Utah
Porter Walton	Salt Lake City, Utah
C. H. Smith (Smith Bros.)	Centerville, Utah
Salt Lake Nursery Co.	Salt Lake City, Utah
Utah Nursery Co.	Salt Lake City, Utah
Toppenish Nursery Co.	Toppenish, Wash.
Robt. Wills (State Nursery)	Salt Lake City, Utah

Statement of Nursery License Fees—1913-1914.

Receipt No.	Name	Amount
1	Robt. Wills (State Nursery Co.)	$ 9.17
2	Brigham Christensen	5.00
3	W. E. Gabbott (Gabbott Bros.)	2.50
4	L. L. May & Co.	2.50
5	Salt Lake Nursery Co.	2.50
6	German Nurseries	2.50
7	Washington Nursery Co.	2.50
8	Utah's Dixie Nursery	2.50
9	N. C. Christensen	1.67
10	Northern Colorado Nursery Co.	2.50
11	D. E. Law	2.50
12	G. W. Varney (Cancelled $2.50)	
13	Toppenish Nursery Co.	2.50
14	Brown Bros. Co.	2.50
15	Void	
16	D. M. Moore	8.33
17	S. Gleason & Son	2.50
18	Utah Nursery Co.	10.00
19	C. H. Smith (Smith Bros. Nursery)	2.50
20	Auerbach Co.	2.50

21	Griesa Nurseries	2.50
22	Chas. B. Harper	5.00
23	S. D. Radmall	2.50
24	Sherman Nursery Co.	5.00
25	Brigham Christensen	2.50
26	N. S. Hansen	2.50
27	Harness Dix Co. (Davis County Nurseries)	8.33
28	Henry A. Dreer	2.50
29	Griesa Nurseries	2.50
30	Idaho Nursery Co.	2.50
31	Gabbott Bros. Nursery	2.50
32	D. E. Law	2.50
33	German Nurseries	2.50
34	N. C. Christensen	2.50
35	S. D. Radmall	2.50
36	F. W. Brow Nursery Co.	2.50
37	E. F. Whaley (Brigham Nursery Co.)	2.50
38	Northern Colorado Nursery Co.	2.50
39	Wm. H. Moon Co.	2.50
40	Stark Bros. Nurseries & Orchards Co.	2.50
41	Henry A. Dreer	2.50
42	D. E. Law	2.50
		$132.50

Financial Statement.

Special Donation Fund.

(Covering inspection of Fruit and Vegetable Shipments made into Montana, in accordance with their quarantine issued on account of the Alfalfa Weevil, 1913-1914.)

Amount Contributed to State Treasurer		$121.64
W. A. Crosbie, Ogden	$ 5.00	
Ogden Fruit Growers Assn., Ogden	34.50	
Cragun Bros., Ogden	20.00	
H. L. Griffin Co., Ogden	10.25	
L. P. Stone, Ogden	19.50	
Ben Lomond Orchard Co., Ogden	10.00	
Cache Valley Seed Co., Smithfield	14.24	
Ogden Commission Co., Ogden	8.15	
	$121.64	
Paid by State Treasurer as follows:		
R. N. Rasmussen, Ogden	$107.40	
Harold R. Hagan, Logan	11.90	
Salt Lake Stamp Co., Salt Lake City	2.34	
	$121.64	$121.64

Statement Covering Contingent Expense Fund State Horticultural Commission.

(Decemebr 1st, 1912, to November 30th, 1914.)

Charged to appropriation 1911-1912.

Balance appropriation per last report		$321.24
Rent	$ 30.00	
Office expense	80.60	
Traveling expense State Inspector	13.50	
Traveling expense Commission members	6.40	
Telegraph and Telephone	51.41	
Exhibition expense	68.00	
Printing	22.75	
Salary Commission members	44.00	
Unexpended balance	4.58	
	$321.24	$321.24

Charged to appropriation 1913-1914 (23 months).

Appropriation		$4,800.00
Rent	$ 690.00	
Office expense	522.97	
Traveling expense State Inspector	546.73	
Traveling expense Commission members	346.10	
Telegraph and Telephone	367.92	
Exhibition expense	79.00	
Printing	127.20	
Salary Commission members	404.00	
Deputy Inspectors	214.95	
Salary Orchard Survey	607.07	
Expenses Orchard Survey	184.90	
Balance to cover unpaid claims and December expenses	709.16	
	$4,800.00	$4,800.00

STATE OF UTAH,
County of Salt Lake. } ss.

J. Edward Taylor being first duly sworn says that he is the Secretary of the State Horticultural Commission. That the foregoing financial statement covering the expenditures from the contingent funds appropriated by the legislature is true and correct. That all expenditures charged to the various accounts have been made according to law and all items of expense were approved by the State Board of Examiners before payment.

J. EDWARD TAYLOR,
Secretary.

Subscribed and sworn to before me this 16th day of December, 1914.

HORACE S. ENSIGN,
(Seal) Notary Public.

County Inspectors and Deputies—1913-1914.

County	Inspector	Address	Deputies	Address
Beaver	Nephi Williams*	Beaver		
Box Elder	Carl Isaacson	Brigham		
Cache	D. M. Campbell	Providence		
Carbon	Henry Fiack	Price		
Davis	E. V. Steed†	Clearfield	E. L. Hansen	Bountiful
Davis	J. P. Payne	Clearfield		
Emery‡				
Garfield‡				
Grand	G. F. Powell	Moab	A. P. Mohr	Elgin
Iron	S. W. Leigh	Cedar City		
Juab	Harry Beagley	Nephi		
Kane‡				
Millard	Peter N. Nielson	Oak City	Wm. Swallow	Fillmore
			Hyrum Prows	Kanosh
Morgan	Hyrum Phillips	Porterville		
Piute‡				
Rich	James Sim	Garden City		
Salt Lake	J. C. Stay	Calders Sta.	J. O. Smith†	E.Mill Creek
			C. M. Nokes	Riverton
			J. M. Smith	Draper
			W. H. Woodbury	Granger
San Juan	F. H. Karnell	Bluff	D. B. Perkins	Monticello
			E. F. Thompson	Grayson
			D. L. Goudelock	Carlisle
			J. M. Cunningham	La Sal
San Pete	J. C. Snow	Fairview		
Sevier	T. G. Humphrey	Salina	Homer McCarty	Richfield
Summit	W. J. Wright	Coalville		
Tooele	W. M. Rydalch	Grantsville		
Uinta	Chas. B. Atwood	Vernal		
Utah	O. J. Poulson	Provo	J. H. Shoell	Pleas. Grove
Wasatch‡				
Washington	J. A. Judd	La Verkin		
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